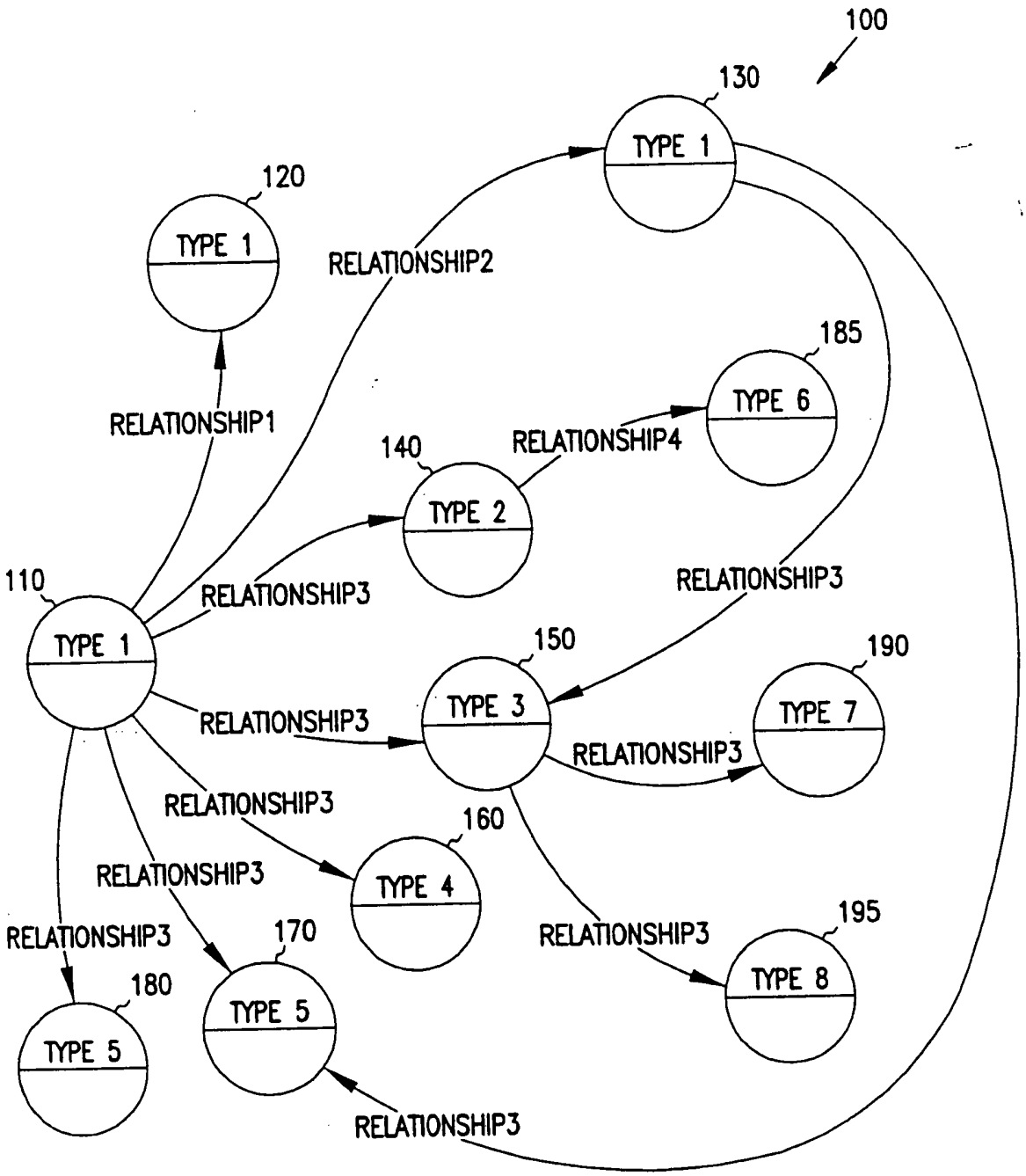
100
130
TYPE 1
120
TYPE 1
RELATIONSHIP2
185
TYPE 6
RELATIONSHIP1
RELATIONSHIP4
140
TYPE 2
110
TYPE 1
RELATIONSHIP3
RELATIONSHIP3
150
TYPE 3
190
TYPE 7
RELATIONSHIP3
RELATIONSHIP3
RELATIONSHIP3
160
TYPE 4
RELATIONSHIP3
170
TYPE 5
RELATIONSHIP3
195
TYPE 8
180
TYPE 5
RELATIONSHIP3

FIG. 1

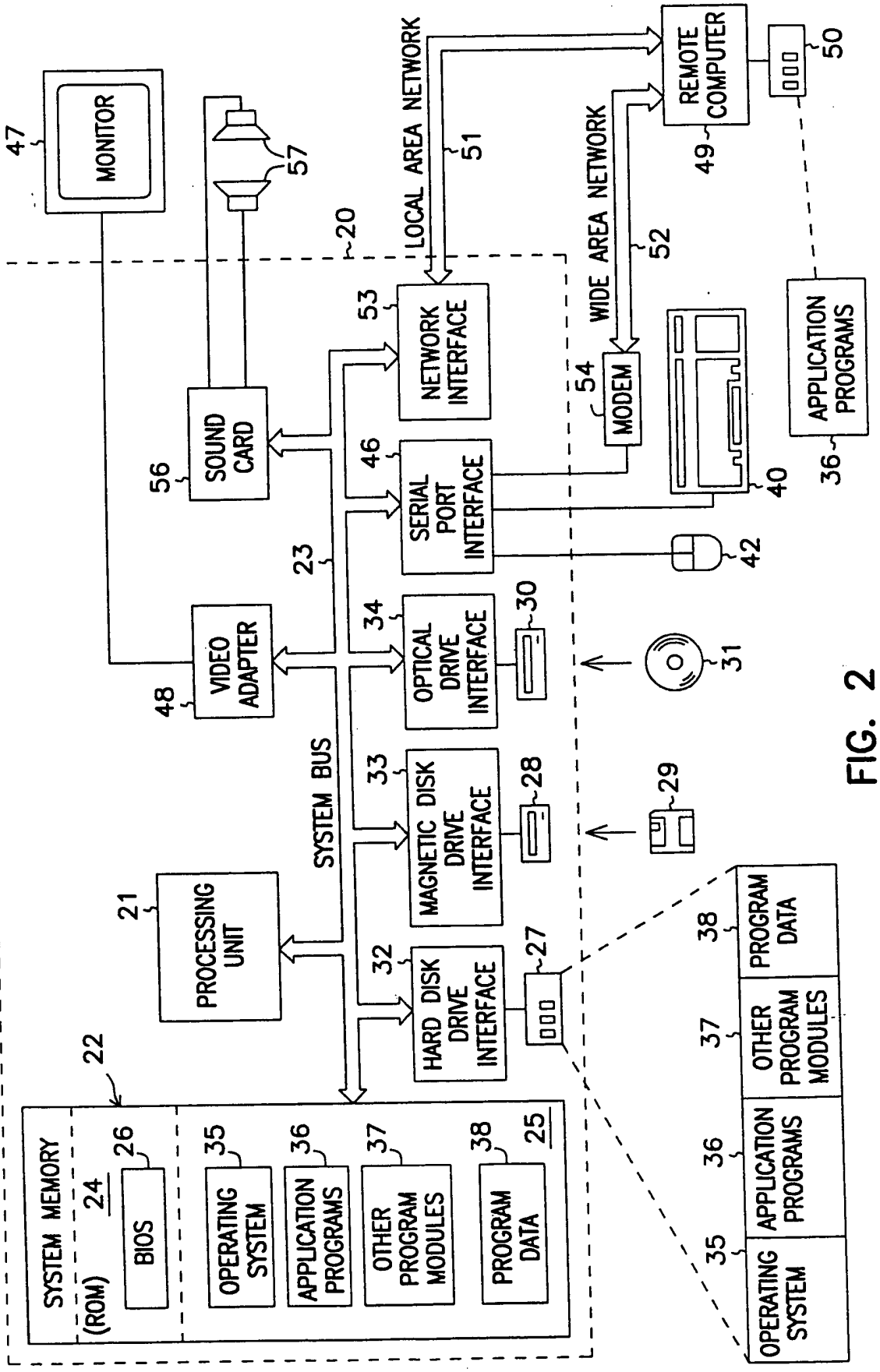
MONITOR
47
57
20
LOCAL AREA NETWORK
51
REMOTE COMPUTER
49
50
WIDE AREA NETWORK
52
53
NETWORK INTERFACE
54
MODEM
APPLICATION PROGRAMS
36
40
56
SOUND CARD
46
SERIAL PORT INTERFACE
42
23
34
OPTICAL DRIVE INTERFACE
30
31
48
VIDEO ADAPTER
SYSTEM BUS
33
MAGNETIC DISK DRIVE INTERFACE
28
29
21
PROCESSING UNIT
32
HARD DISK DRIVE INTERFACE
27
22
SYSTEM MEMORY (ROM)
24
BIOS
26
OPERATING SYSTEM
35
APPLICATION PROGRAMS
36
OTHER PROGRAM MODULES
37
PROGRAM DATA
38
25
PROGRAM DATA
38
OTHER PROGRAM MODULES
37
APPLICATION PROGRAMS
36
OPERATING SYSTEM
35

FIG. 2

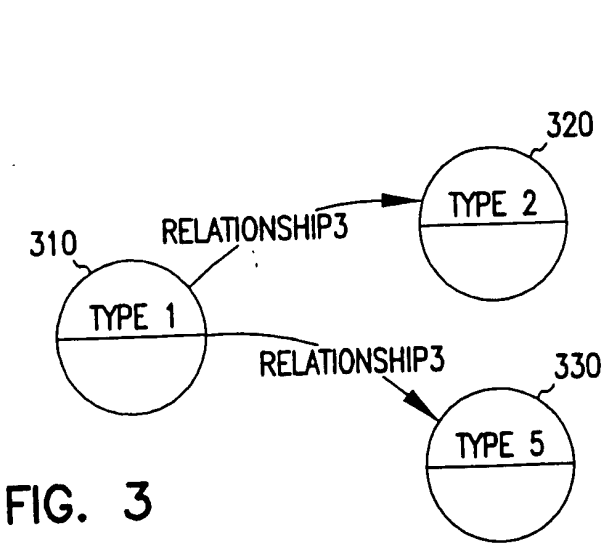
300
320
TYPE 2
310
RELATIONSHIP3
TYPE 1
RELATIONSHIP3
330
TYPE 5

FIG. 3

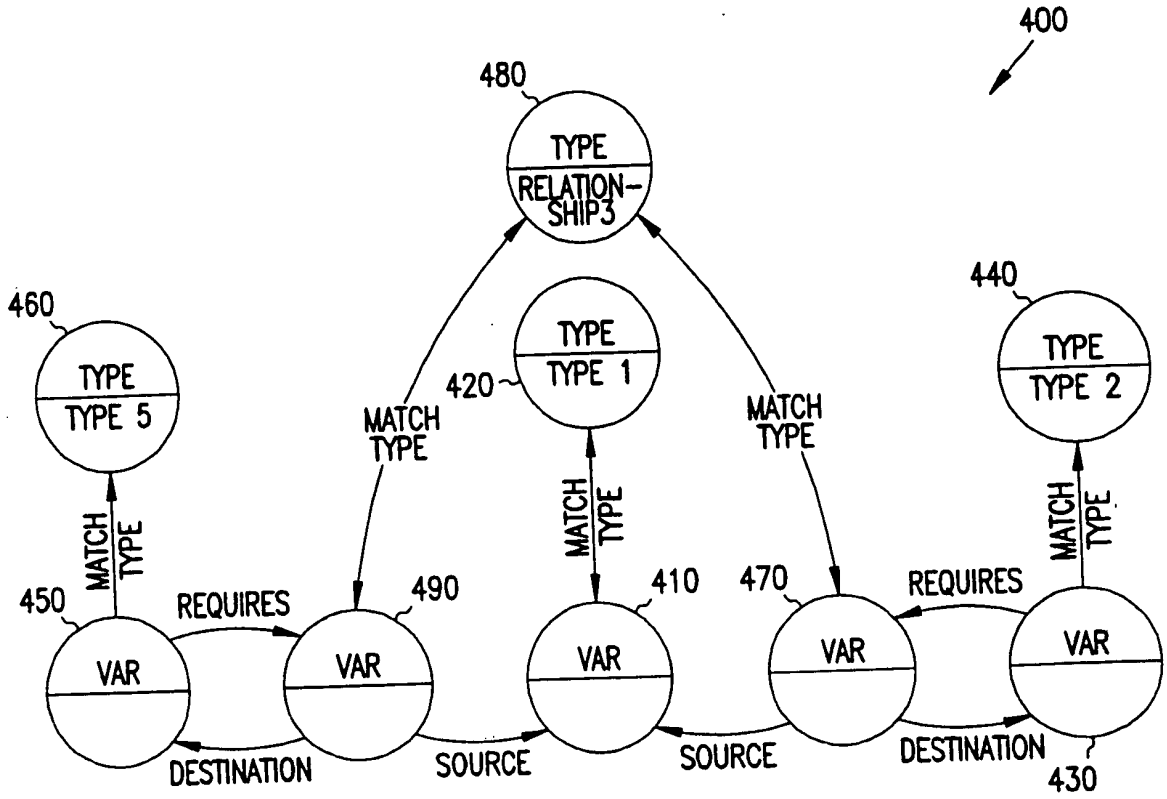
400
480
TYPE
RELATION-
SHIP3
460
TYPE
TYPE 5
420
TYPE
TYPE 1
440
TYPE
TYPE 2
MATCH
TYPE
MATCH
TYPE
MATCH
TYPE
MATCH
TYPE
450
VAR
REQUIRES
490
VAR
410
VAR
470
VAR
REQUIRES
VAR
DESTINATION
SOURCE
SOURCE
DESTINATION
430

FIG. 4

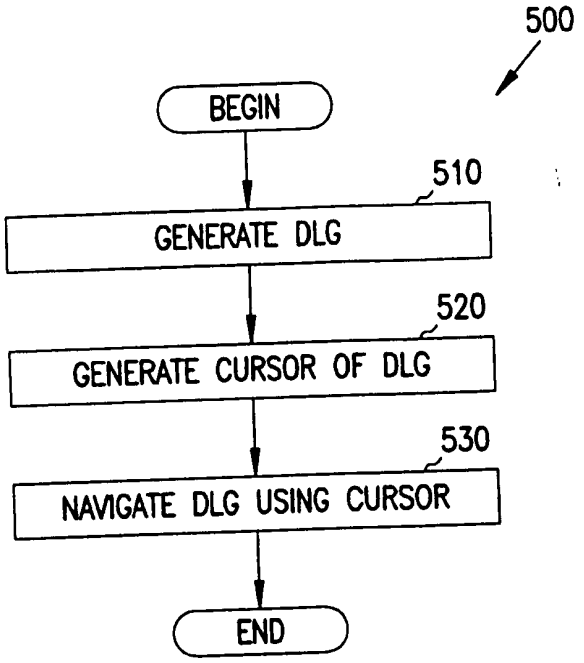
500
BEGIN
510
GENERATE DLG
520
GENERATE CURSOR OF DLG
530
NAVIGATE DLG USING CURSOR
END

FIG. 5

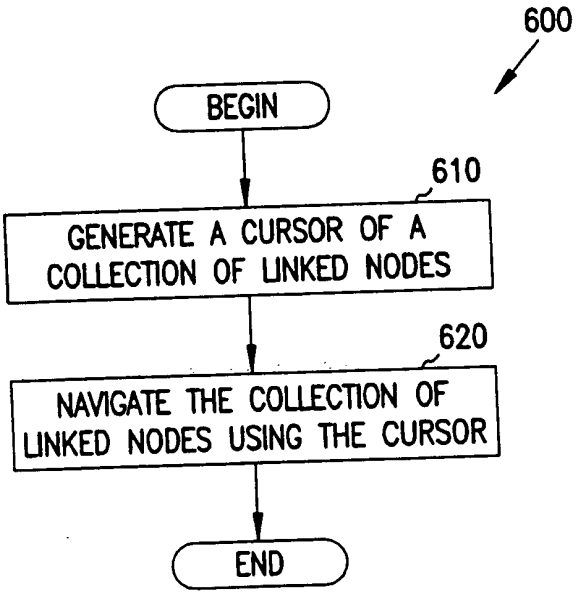
600
BEGIN
610
GENERATE A CURSOR OF A COLLECTION OF LINKED NODES
620
NAVIGATE THE COLLECTION OF LINKED NODES USING THE CURSOR
END

FIG. 6

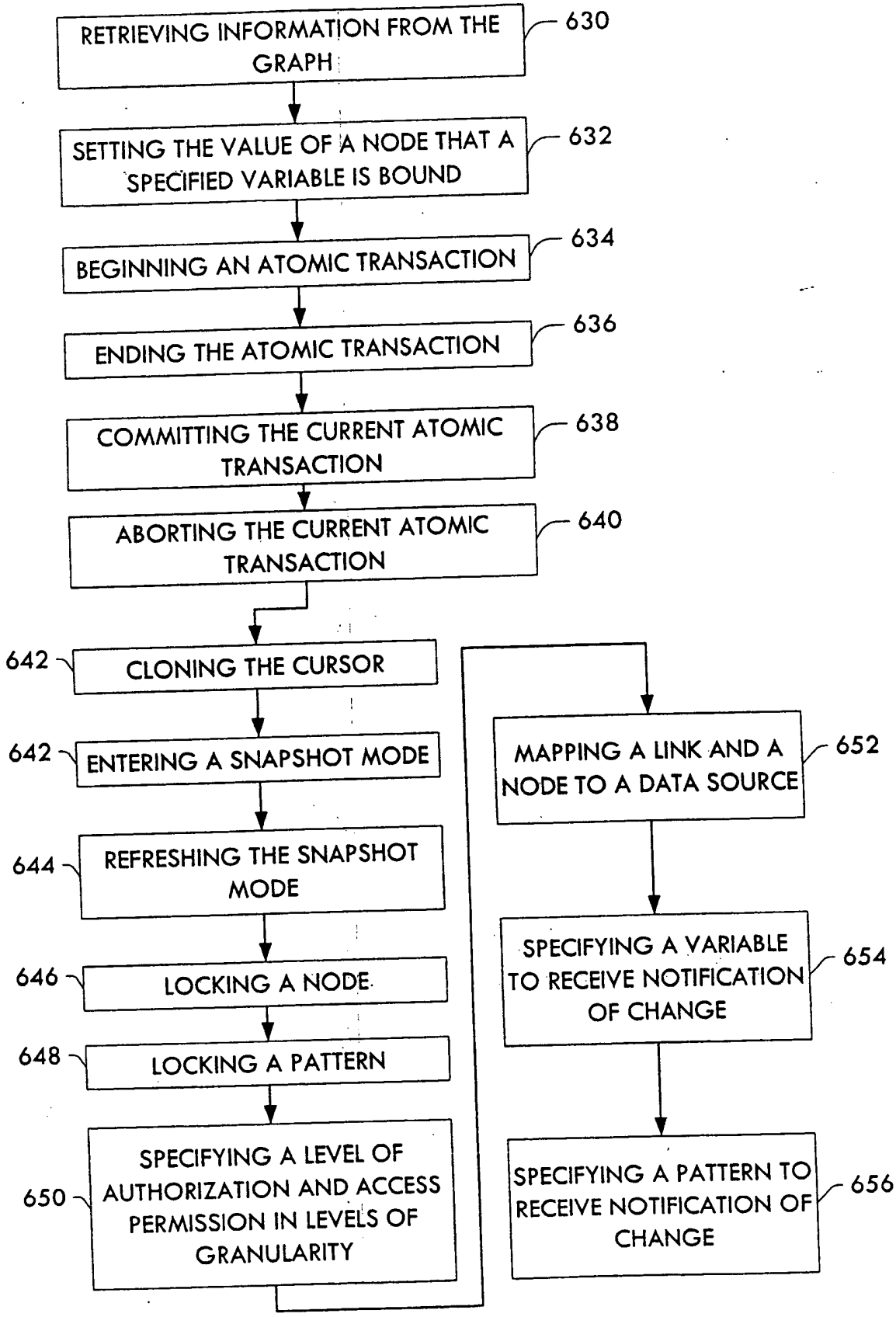
RETRIEVING INFORMATION FROM THE GRAPH
630
SETTING THE VALUE OF A NODE THAT A SPECIFIED VARIABLE IS BOUND
632
BEGINNING AN ATOMIC TRANSACTION
634
ENDING THE ATOMIC TRANSACTION
636
COMMITTING THE CURRENT ATOMIC TRANSACTION
638
ABORTING THE CURRENT ATOMIC TRANSACTION
640
642
CLONING THE CURSOR
642
ENTERING A SNAPSHOT MODE
644
REFRESHING THE SNAPSHOT MODE
646
LOCKING A NODE
648
LOCKING A PATTERN
650
SPECIFYING A LEVEL OF AUTHORIZATION AND ACCESS PERMISSION IN LEVELS OF GRANULARITY
MAPPING A LINK AND A NODE TO A DATA SOURCE
652
SPECIFYING A VARIABLE TO RECEIVE NOTIFICATION OF CHANGE
654
SPECIFYING A PATTERN TO RECEIVE NOTIFICATION OF CHANGE
656

FIG 6A

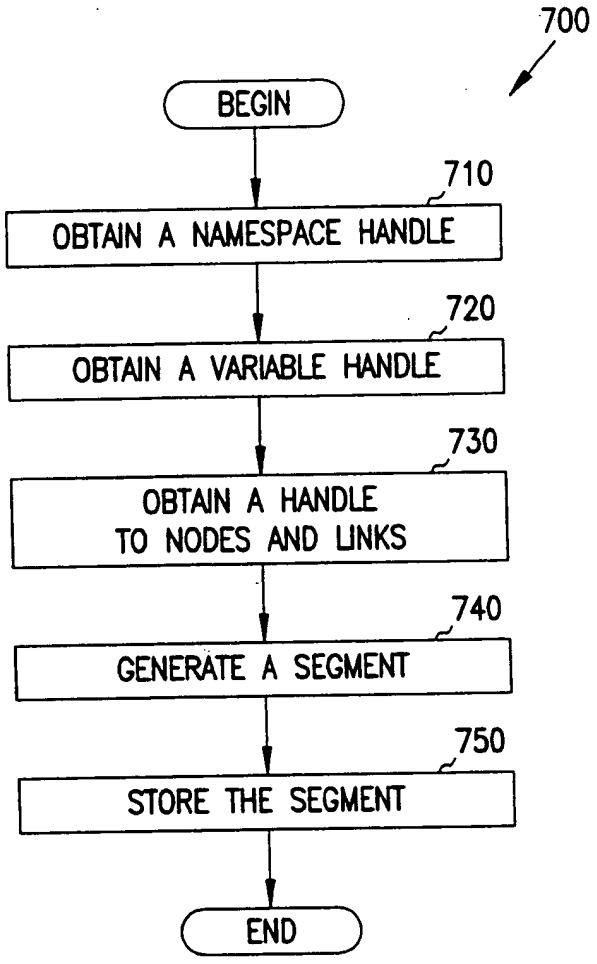
700
BEGIN
710
OBTAIN A NAMESPACE HANDLE
720
OBTAIN A VARIABLE HANDLE
730
OBTAIN A HANDLE TO NODES AND LINKS
740
GENERATE A SEGMENT
750
STORE THE SEGMENT
END

FIG. 7

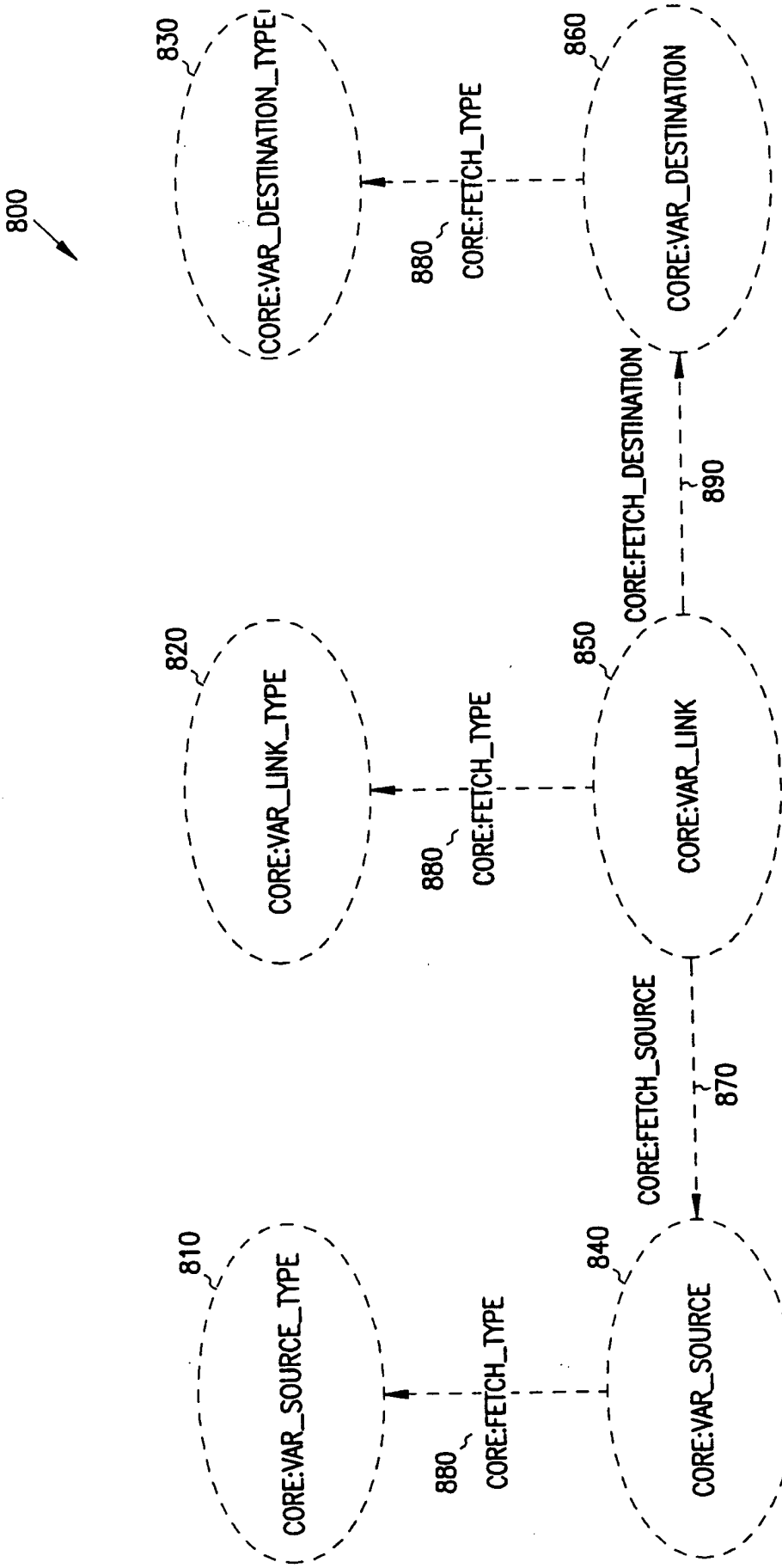
800
830
CORE:VAR_DESTINATION_TYPE
880
CORE:FETCH_TYPE
860
CORE:VAR_DESTINATION
CORE:FETCH_DESTINATION
890
820
CORE:VAR_LINK_TYPE
880
CORE:FETCH_TYPE
850
CORE:VAR_LINK
CORE:FETCH_SOURCE
870
810
CORE:VAR_SOURCE_TYPE
880
CORE:FETCH_TYPE
840
CORE:VAR_SOURCE

FIG. 8

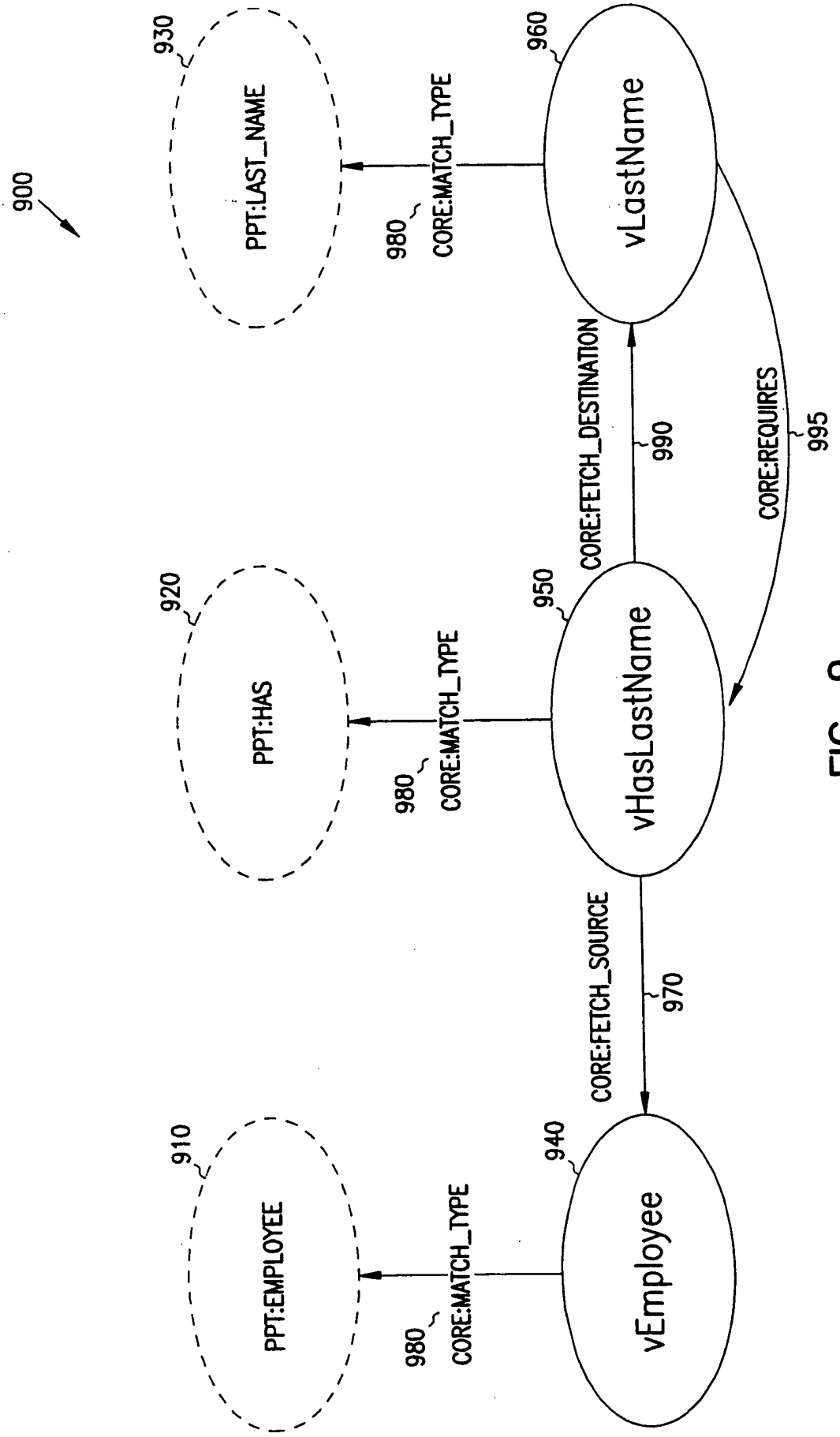
900
930
PPT:LAST_NAME
980
CORE:MATCH_TYPE
960
vLastName
CORE:FETCH_DESTINATION
990
CORE:REQUIRES
995
920
PPT:HAS
980
CORE:MATCH_TYPE
950
vHasLastName
CORE:FETCH_SOURCE
970
910
PPT:EMPLOYEE
980
CORE:MATCH_TYPE
940
vEmployee

FIG. 9

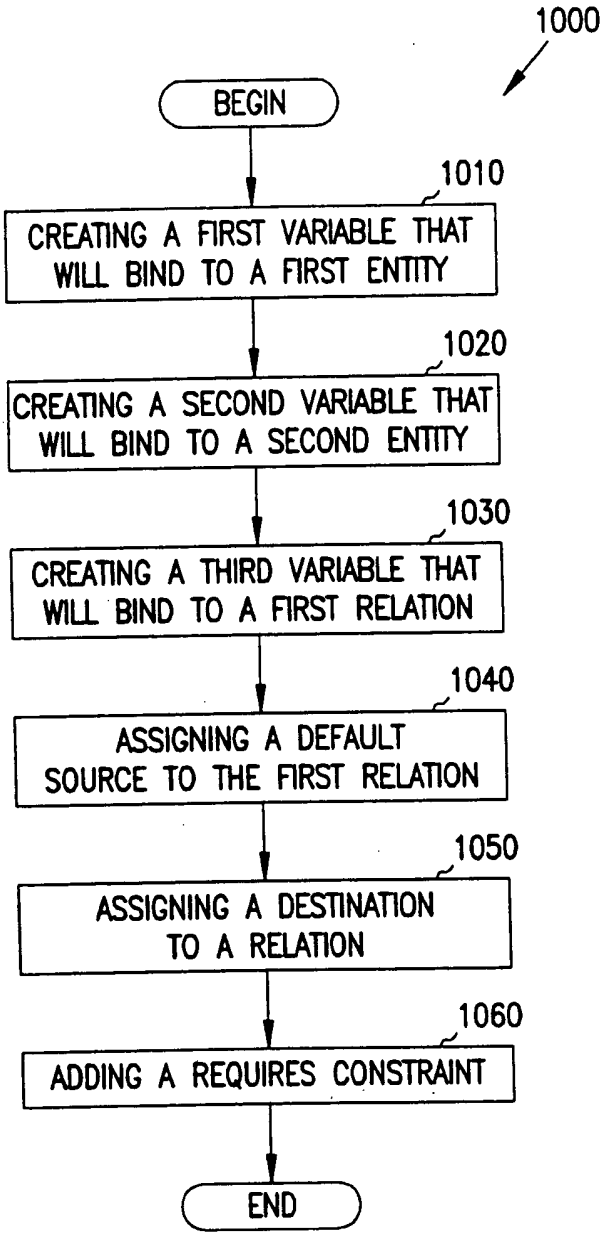
1000
BEGIN
1010
CREATING A FIRST VARIABLE THAT WILL BIND TO A FIRST ENTITY
1020
CREATING A SECOND VARIABLE THAT WILL BIND TO A SECOND ENTITY
1030
CREATING A THIRD VARIABLE THAT WILL BIND TO A FIRST RELATION
1040
ASSIGNING A DEFAULT SOURCE TO THE FIRST RELATION
1050
ASSIGNING A DESTINATION TO A RELATION
1060
ADDING A REQUIRES CONSTRAINT
END

FIG. 10

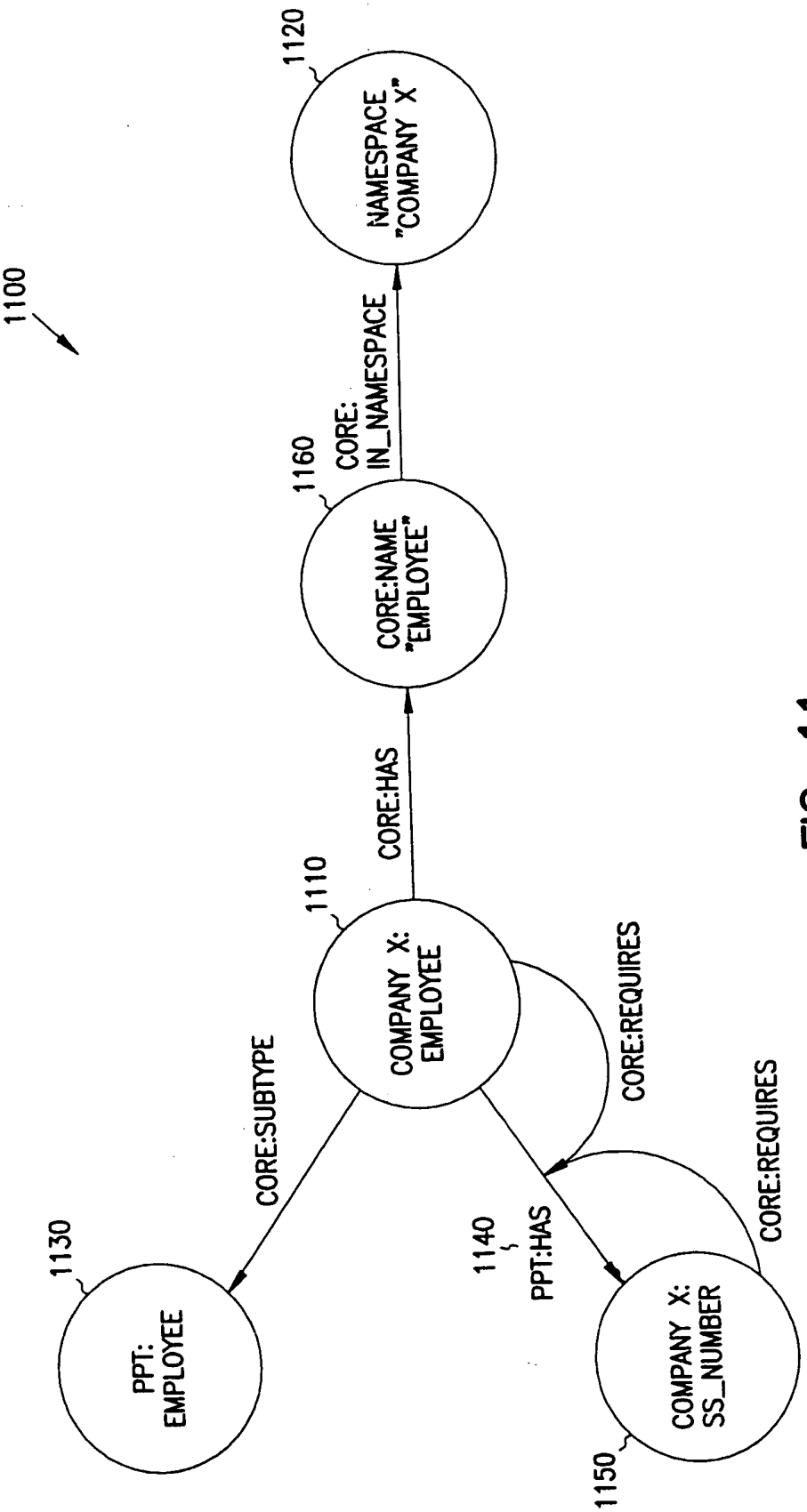
1100
1120
NAMESPACE "COMPANY X"
CORE: IN_NAMESPACE
1160
CORE:NAME "EMPLOYEE"
CORE:HAS
1110
COMPANY X: EMPLOYEE
CORE:REQUIRES
CORE:SUBTYPE
1130
PPT: EMPLOYEE
1140
PPT:HAS
CORE:REQUIRES
COMPANY X: SS_NUMBER
1150

FIG. 11

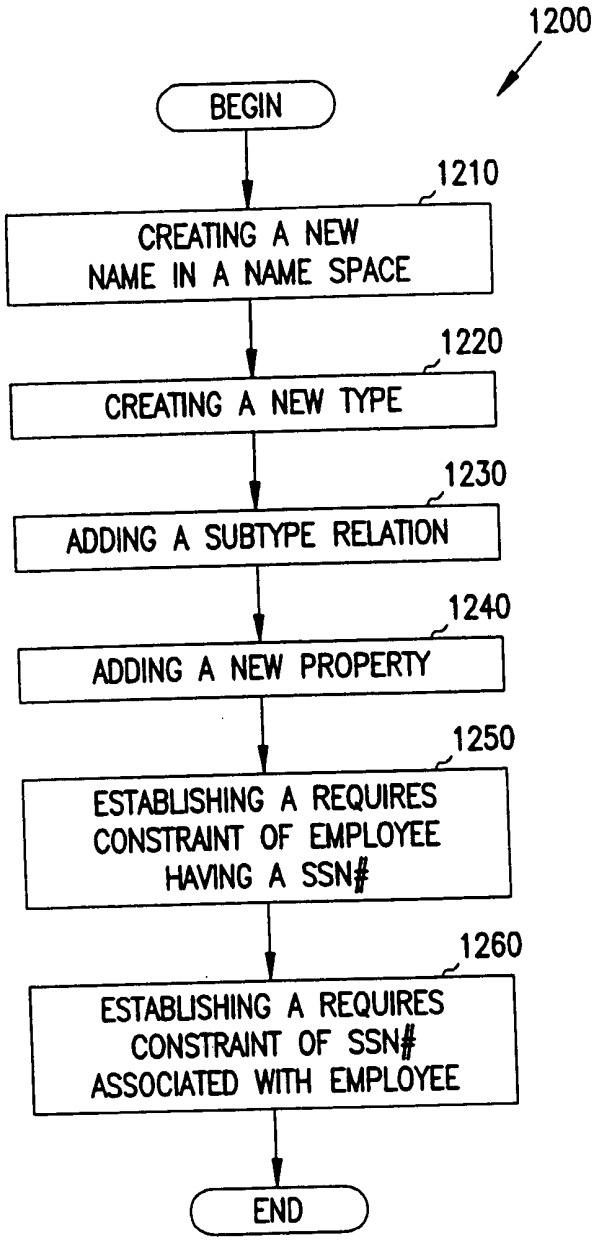
1200
BEGIN
1210
CREATING A NEW NAME IN A NAME SPACE
1220
CREATING A NEW TYPE
1230
ADDING A SUBTYPE RELATION
1240
ADDING A NEW PROPERTY
1250
ESTABLISHING A REQUIRES CONSTRAINT OF EMPLOYEE HAVING A SSN#
1260
ESTABLISHING A REQUIRES CONSTRAINT OF SSN# ASSOCIATED WITH EMPLOYEE
END

FIG. 12

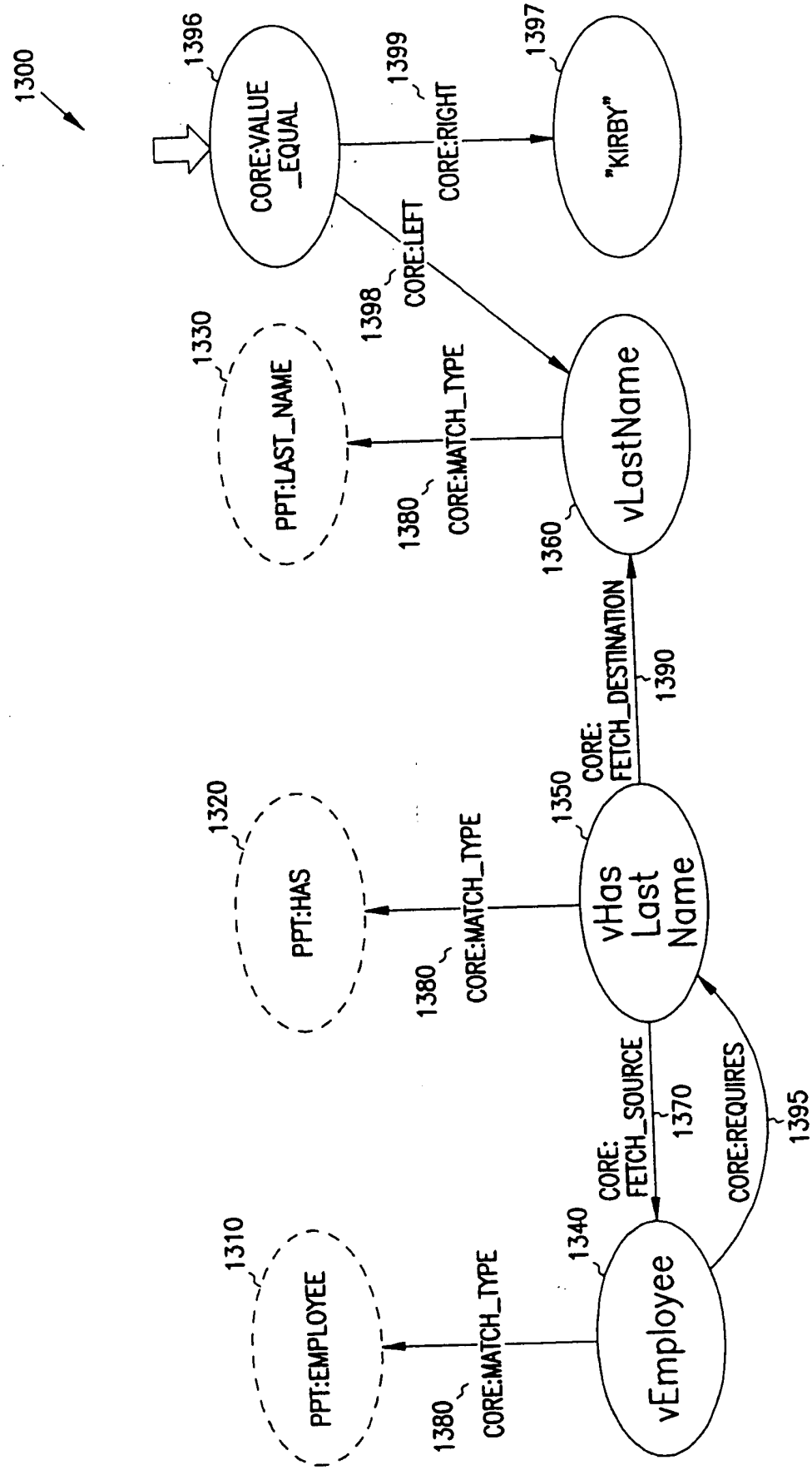
1300
1396
CORE:VALUE_EQUAL
1399
CORE:RIGHT
1397
"KIRBY"
1398
CORE:LEFT
1330
PPT:LAST_NAME
1380
CORE:MATCH_TYPE
1360
vLastName
1390
CORE:FETCH_DESTINATION
1320
PPT:HAS
1380
CORE:MATCH_TYPE
1350
vHas Last Name
1370
CORE:FETCH_SOURCE
1395
CORE:REQUIRES
1310
PPT:EMPLOYEE
1380
CORE:MATCH_TYPE
1340
vEmployee

FIG. 13

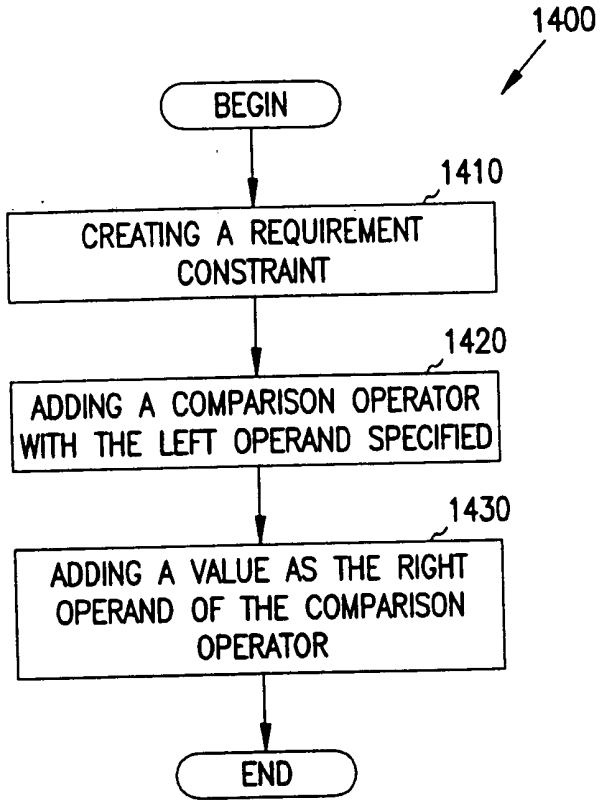
1400
BEGIN
1410
CREATING A REQUIREMENT CONSTRAINT
1420
ADDING A COMPARISON OPERATOR WITH THE LEFT OPERAND SPECIFIED
1430
ADDING A VALUE AS THE RIGHT OPERAND OF THE COMPARISON OPERATOR
END

FIG. 14

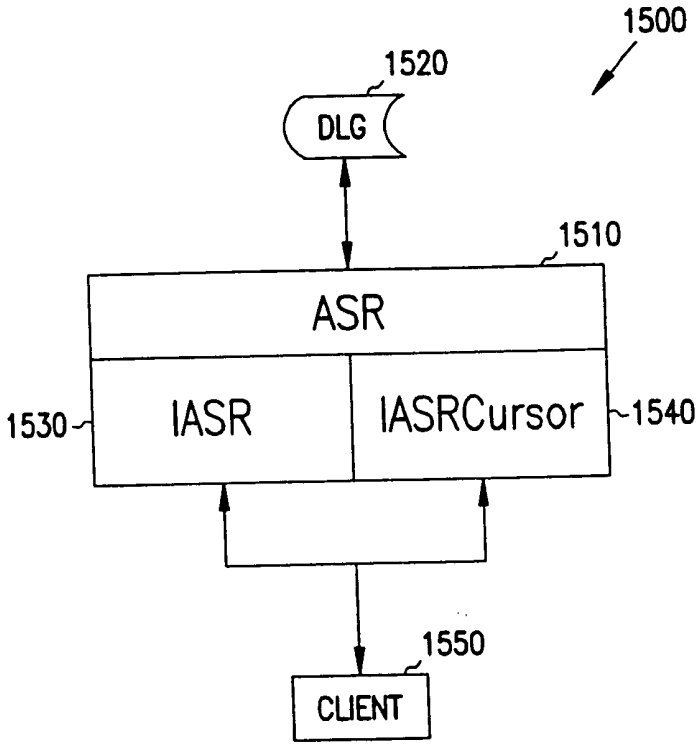
1500
1520
DLG
1510
ASR
1530
IASR
IASRCursor
1540
1550
CLIENT

FIG. 15

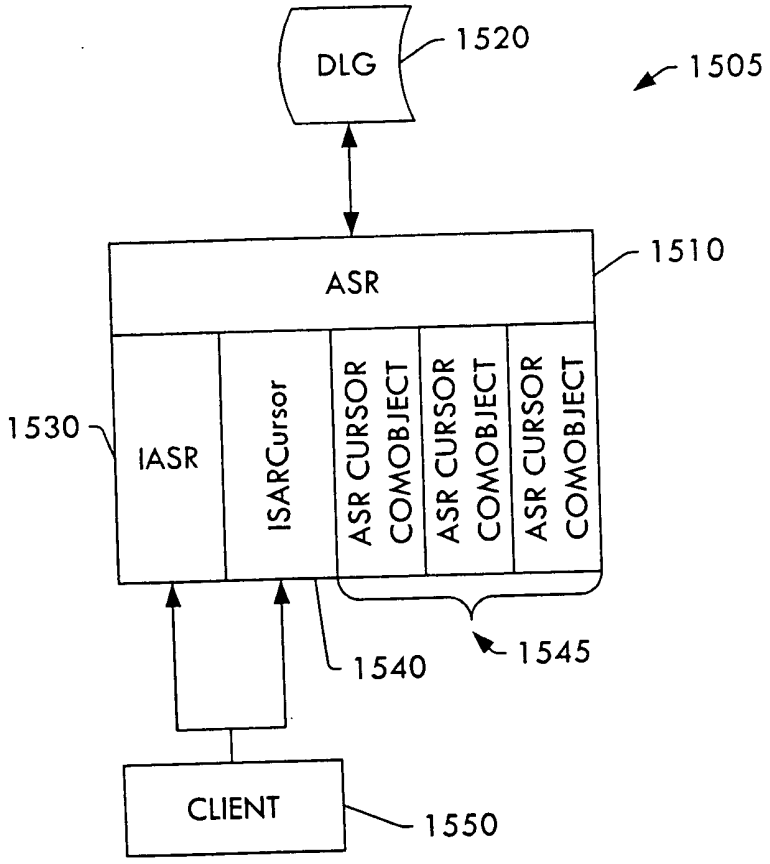
DLG
1520
1505
ASR
1510
IASR
ISARCursor
ASR CURSOR COMOBJECT
ASR CURSOR COMOBJECT
ASR CURSOR COMOBJECT
1530
1540
1545
CLIENT
1550

FIG. 15A

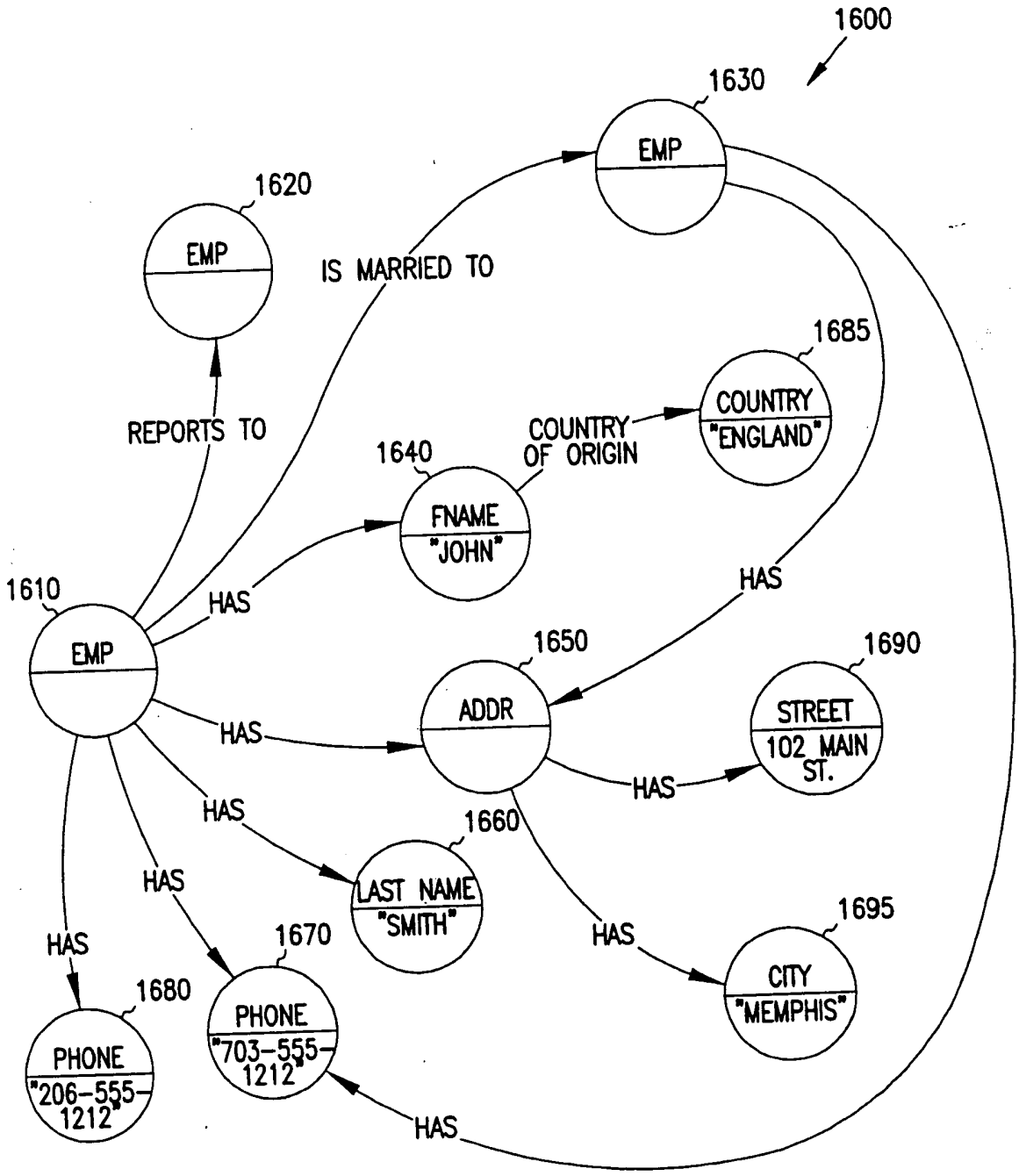

FIG. 16

CONVENTIONAL

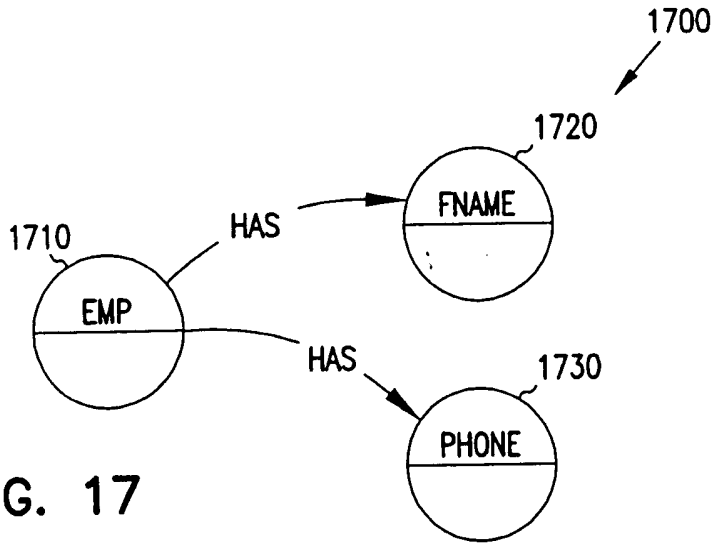
1700
1720
FNAME
1710
HAS
EMP
HAS
1730
PHONE

FIG. 17

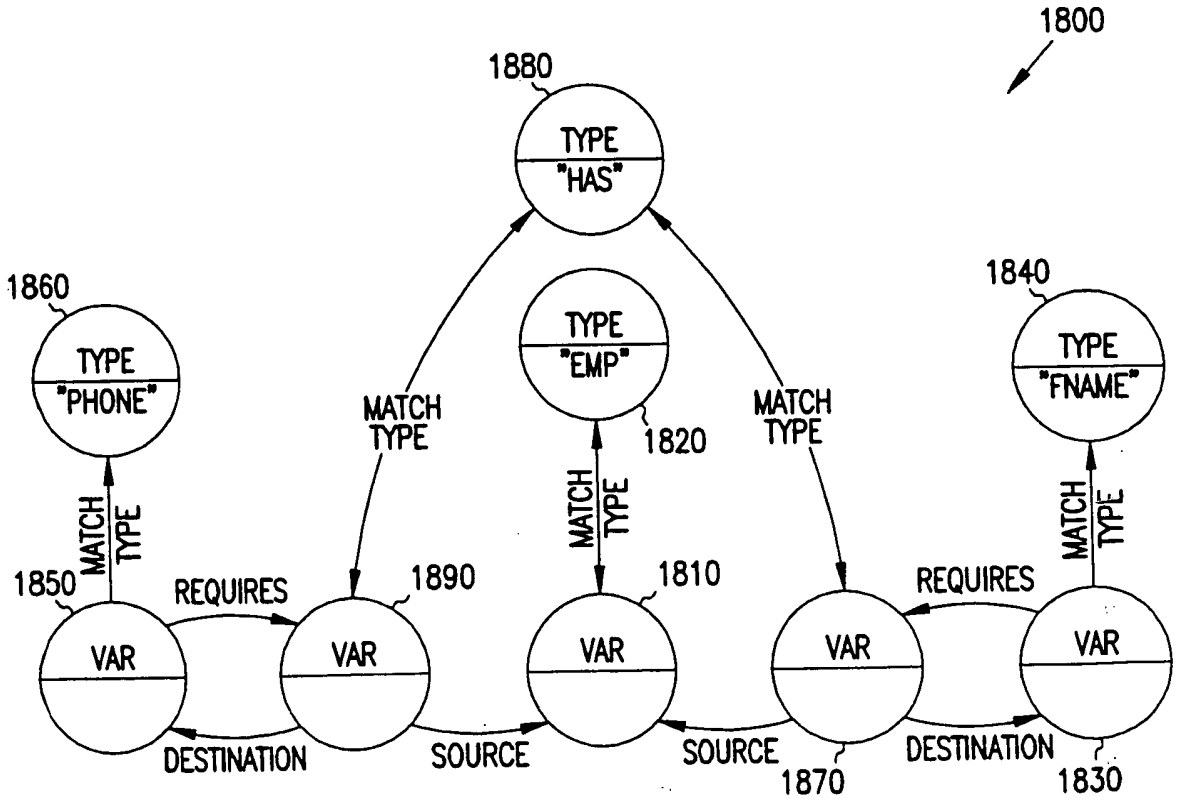
1800
1880
TYPE
"HAS"
1860
TYPE
"PHONE"
TYPE
"EMP"
1820
1840
TYPE
"FNAME"
MATCH
TYPE
MATCH
TYPE
MATCH
TYPE
MATCH
TYPE
1850
REQUIRES
1890
1810
REQUIRES
VAR
VAR
VAR
VAR
VAR
DESTINATION
SOURCE
SOURCE
DESTINATION
1870
1830

FIG. 18